

Abstracts

Normal Transmission-Line Networks and Their Lumped LC Presentation

K.K. Pang. "Normal Transmission-Line Networks and Their Lumped LC Presentation." 1973 Transactions on Microwave Theory and Techniques 21.10 (Oct. 1973 [T-MTT]): 601-607.

A previous result is extended and a new presentation is described for Richards' transmission-line (TL) networks. The new presentation is in a lumped LC form; therefore, classical analysis and synthesis techniques are directly applicable. The class of networks for which this presentation is possible is studied in detail. This class of networks, called normal TL networks, is found to be a necessary and sufficient condition for driving-point immittance functions to be rational positive real functions of $\lambda = \tanh \tau \rho$. The effectiveness of this representation is further demonstrated by applying it to graph-transformation analysis method. It simplifies the procedure considerably and reveals additional physical insight into the TL network.

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